

WHAT IS CLAIMED IS:

1. A system having diamond-like carbon (DLC) contact surfaces, comprising:

5 relatively movable, facing contact surfaces at least one of which is coated with DLC, and

a lubricant for a system having DLC contact surfaces interposed between said contact surfaces, said lubricant fulfilling following conditions (a) and (b):

10 (a) wherein said lubricant for a system having DLC contact surfaces comprises a lubricant base oil (A) containing, as a main component, a base oil (X) consisting at least one of a hydrocracked mineral oil, a wax-isomerized mineral oil, and a poly- $\alpha$ -olefin base oil, wherein said base oil  
15 (X) has a kinematic viscosity of 2 to 20 mm<sup>2</sup>/s at 100 °C, a total aromatic content of not higher than 5 wt%, and a sulfur content of not higher than 0.005 wt%; and

(b) wherein said lubricant for a system having DLC contact surfaces has a sulfur content of not higher than 0.2 wt%.

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2. The system according to claim 1, wherein said lubricant for a system having DLC contact surfaces further comprises at least one of a sulfur-free metal detergent (B), a sulfur-free phosphorus compound (C), and a sulfur-free  
25 ashless anti-oxidant (D).

3. The system according to claim 1, wherein said lubricant

for a system having DLC contact surfaces further comprises a friction modifier consisting at least one of an oxygen-containing organic compound and aliphatic amines.

5     4. The system according to claim 1, wherein said contact surfaces comprise contact surfaces in an internal combustion engine.

10     5. A method of lubricating DLC contact surfaces, comprising lubricating relatively movable, facing contact surfaces at least one of which is coated with DLC, with a lubricant for a system having DLC contact surfaces interposed between said contact surfaces, said lubricant fulfilling following conditions (a) and (b):

15     (a) wherein said lubricant for a system having DLC contact surfaces comprises a lubricant base oil (A) containing, as a main component, a base oil (X) consisting at least one of a hydrocracked mineral oil, a wax-isomerized mineral oil, and a poly- $\alpha$ -olefin base oil, wherein said base oil  
20     (X) has a kinematic viscosity of 2 to 20 mm<sup>2</sup>/s at 100 °C, a total aromatic content of not higher than 5 wt%, and sulfur content of not higher than 0.005 wt%; and

25     (b) wherein said lubricant for a system having DLC contact surfaces has a sulfur content of not higher than 0.2 wt%.

6. A lubricant for a system having DLC contact surfaces, said lubricant being for lubricating relatively movable,

facing contact surfaces at least one of which is coated with DLC, and fulfilling following conditions (a) and (b):

(a) wherein said lubricant for a system having DLC contact surfaces comprises a lubricant base oil (A) containing a

5 base oil (X) as a main component, said base oil (X) consisting at least one of a hydrocracked mineral oil, a wax-isomerized mineral oil, and a poly- $\alpha$ -olefin base oil, and having a kinematic viscosity of 2 to 20 mm<sup>2</sup>/s at 100 °C, a total aromatic content of not higher than 5 wt%, and a sulfur  
10 content of not higher than 0.005 wt%; and

(b) wherein said lubricant for a system having DLC contact surfaces has a sulfur content of not higher than 0.2 wt%.

7. The lubricant according to claim 6, further comprising  
15 at least one of a sulfur-free metal detergent (B), a sulfur-free phosphorus compound (C), and a sulfur-free ashless anti-oxidant (D).

8. The lubricant according to claim 6, further comprising  
20 a friction modifier consisting at least one of an oxygen-containing organic compound and aliphatic amines.

9. The lubricant according to claim 6, wherein said  
lubricant is free of sulfur-containing additives selected  
25 from the group consisting of zinc dithiophosphate, sulfur-containing metal detergents, and mixtures thereof.